IN THE CLAIMS

Please amend the claims as follows in accordance with the Revised Format of Amendments under 37 C.F.R. § 1.121.

Claims 1-4 (cancelled)

5.(currently amended) A guided wave optical tunable filter for adding one selected frequency channel to a substantially broad range of optical frequencies in an incident light wave, and for dropping said selected frequency channel from said substantially broad range of optical frequencies in an incident light wave, comprising

(a) a substrate of a birefringent material which exhibits the linear (Pockels) electrooptic effect and the linear strain-optic effect;

(b) an optical waveguide structure which supports a single mode for both TE and TM polarizations formed on said substrate; said optical waveguide structure consisting of a first straight initial throughput section and a second straight initial add section joined in continuous fashion to the two input ports of a first four port directional coupler, first and second polarization conversion/ electrooptic tuning sections, and a second four port directional coupler of which the two output ports are joined in continuous fashion to a first straight final throughput section and a second straight final drop section; wherein said first initial throughput section is positioned to receive said incident light wave and said first initial add section is positioned to receive input light in said selected frequency channel; wherein said first and second polarization conversion/ electrooptic tuning sections provide continuous optical paths between said first and second four port directional couplers; wherein said first final throughput section transmits said incident light wave plus light in said selected frequency channel coupled into said initial add section minus light in said selected frequency channel coupled out of said final drop section; wherein said second final drop section transmits light in said selected frequency channel coupled out of said final drop

section; wherein optical path length experienced by a TE light wave in traversing said straight initial throughput section, said first four port directional coupler, said first polarization conversion/electrooptic tuning section, said second four port directional coupler, and said straight final drop section differs from the optical path length experienced by a TE light wave in traversing said straight initial throughput section, said first four port directional coupler, said second polarization conversion/electrooptic tuning section, said second four port directional coupler, and said straight final drop section by half an optical wavelength;

(c) a multiplicity of strain-inducing strips of a dielectric material situated on top of said polarization conversion/electrooptic tuning waveguide sections; said strain-inducing strips having the effect of inducing polarization coupling in said polarization conversion/electrooptic tuning waveguide sections; said strain-inducing strips having a spatial periodicity Λ such that substantially complete phase-matched polarization conversion occurs in said first and second polarization conversion/electrooptic tuning waveguide sections at said selected optical frequency within said broad range of optical frequencies; said strain-inducing strips situated on top of first polarization conversion/electrooptic tuning waveguide section being offset in position from said strain-inducing strips situated on top of second polarization conversion/electrooptic tuning waveguide section by an odd integral multiple of $\Lambda/2$, wherein said positions are measured relative to said first four-port directional coupler;

(d) a source of applied voltage V;

(e) electrodes disposed to produce an electric field in and around said first and second polarization conversion/electrooptic tuning sections in response to said applied voltage V; wherein said electric field causes a change in the birefringence in said first and second polarization conversion/electrooptic tuning waveguide sections such that said selected optical frequency is tuned in proportion to said applied voltage; and

(f) means connecting said source of applied voltage to said electrodes ;

(g) wherein said first four port directional coupler and said second four port directional coupler each satisfy the condition that the sum of the fraction of optical power in TE polarization coupled into a particular input port which exits through a particular output port plus the fraction of optical power in TM polarization coupled into said particular input port which exits through said particular output port is substantially equal to unity.

6.(original) The apparatus of Claim 5 wherein said substrate material is lithium niobate.

7.(original) The apparatus of Claim 5 wherein said substrate material is lithium tantalate.

8(original). The apparatus of Claim 5 wherein said strain inducing strips comprise a film of fused silica deposited uniformly on said substrate at a temperature > 250°C and patterned lithographically at or near room temperature.

Claim 9 (cancelled)

~~10~~ 21.(currently amended) A guided wave optical tunable filter for adding one selected frequency channel to a substantially broad range of optical frequencies in an incident light wave, and for dropping said selected frequency channel from said substantially broad range of optical frequencies in an incident light wave, comprising:

(a) a substrate of a birefringent material which exhibits the linear (Pockels) electrooptic effect and the linear strain-optic effect;

(b) an optical waveguide structure which supports a single mode for both TE and TM polarizations formed on said substrate; said optical waveguide structure consisting of a first straight initial throughput section and a second straight initial add section joined in continuous fashion to the two input ports of a first four port directional coupler, first and second polarization conversion/ electrooptic tuning sections, and a second four port directional coupler of which the two output ports are joined in continuous fashion to a

first straight final throughput section and a second straight final drop section; wherein said first initial throughput section is positioned to receive said incident light wave and said first initial add section is positioned to receive input light in said selected frequency channel; wherein said first and second polarization conversion/ electrooptic tuning sections provide continuous optical paths between said first and second four port directional couplers; wherein said first final throughput section transmits said incident light wave plus light in said selected frequency channel coupled into said initial add section minus light in said selected frequency channel coupled out of said final drop section; wherein said second final drop section transmits light in said selected frequency channel coupled out of said final drop section; wherein optical path length experienced by a TE light wave in traversing said straight initial throughput section, said first four port directional coupler, said first polarization conversion/electrooptic tuning section, said second four port directional coupler, and said straight final drop section differs from the optical path length experienced by a TE light wave in traversing said straight initial throughput section, said first four port directional coupler, said second polarization conversion/electrooptic tuning section, said second four port directional coupler, and said straight final drop section by half an optical wavelength;

(c) a multiplicity of strain-inducing strips of a dielectric material situated on top of said polarization conversion/electrooptic tuning waveguide sections; said strain-inducing strips having the effect of inducing polarization coupling in said polarization conversion/electrooptic tuning waveguide sections; said strain-inducing strips having a spatial periodicity Λ such that substantially complete phase-matched polarization conversion occurs in said first and second polarization conversion/electrooptic tuning waveguide sections at said selected optical frequency within said broad range of optical frequencies; said strain-inducing strips situated on top of first polarization conversion/electrooptic tuning waveguide section being offset in position from said strain-inducing strips situated on top of second polarization

conversion/electrooptic tuning waveguide section by an odd integral multiple of $\Lambda/2$, wherein said positions are measured relative to said first four-port directional coupler and wherein said strain inducing strips comprise a film of fused silica deposited uniformly on said substrate at a temperature > 250°C and patterned lithographically at or near room temperature ;

(d) a source of applied voltage V;

(e) electrodes disposed to produce an electric field in and around said first and second polarization conversion/electrooptic tuning sections in response to said applied voltage V; wherein said electric field causes a change in the birefringence in said first and second polarization conversion/electrooptic tuning waveguide sections such that said selected optical frequency is tuned in proportion to said applied voltage;

(f) means connecting said source of applied voltage to said electrodes ; and

(g) wherein said first four port directional coupler and said second four port directional coupler each satisfy the condition that the sum of the fraction of optical power in TE polarization coupled into a particular input port which exits through a particular output port plus the fraction of optical power in TM polarization coupled into said particular input port which exits through said particular output port is substantially equal to unity.

22.(new) The apparatus of Claim 21 wherein said substrate material is lithium niobate.

23.(new) The apparatus of Claim 21 wherein said substrate material is lithium tantalate.